

Ἀστεριολόγια.

A N

Ephemeris

For the yeer of Christ,

1651.

Being the third after Bissextile
or Leap-yeer.

And from the Creation, 5644.

O R,

A parcel of Astronomy, shewing the motion of the
two great Lights, of the Dragons head, and divers ope-
rations and propositions Astronomical, and how to find
the time (exactly) of the culmination of the Moon, Pla-
nets or any fixed Star; their Cosmical and Achronical ri-
sing and setting, & what effects they produce according
to the judgment of the best Writers, and divers other
things worthy of note, & divers errors in Astron corrected

Calculated exactly for the Meridian of the Towne and
Port of *Santhwich* in the County of *Kent*, Lat. 51 degr. 18 min.
Long. 21 degr. 15 min. and with directions herein, will serve for
all Great *Brittaine*, *France*, *Holland*, &c.

By *HENRY HARFLETE*, Gent. Student in Astrono-
my, and Practitioner in the Mathematicks.

Τὸ ἀληθὲς ἐν τῷ δὲ ψεύδι πολυπλοῦδες.

Veritas una: Error multiplex.

LONDON, Printed by T. R. and E. M. for the
Company of STATIONERS. 1651.

A Table to know when the Terms begin and end, and the number of their Returns, with the day of the month whereon they will be this present yeere

Hillary Term begins the 23 of *January*, and ends the 12 of *February*, and hath 4. Returns, viz.

Octab. Hillarij. January 20
Quind. Hillarij. January 27
Craft. Purif. February 3
Octab. Purif. February 10

Easter Term begins the 16 of *April*, and ends the 12 of *May*, and hath 5 Returns, viz.

Quind. Pasche. April 14
Tres Pasche. April 21
Mense Pasche. April 28
Quinq. Pasche. May 5
Craft. Ascens. May 9

Trinity Term begins the 30 of *May*, and ends the 18 of *June*, and hath 4 Returns, viz.

Craft. Trinit. May 16
Octabis Trinit. June 2
Quind. Trinit. June 9
Tres Trinit. June 16

Michaelmas Terme begins *October* 23 and ends the 18 of *November*, and hath 6 Returns, viz.

Tres Michael. October 20
Mense Mich. October 27
Craft. Animar. November 3
Craft. Mart. November 12
Octab. Mart. November 18
Quind. Mart. November 25

Friendly Reader,

THere is a Book now in the Presse intituled *Harmonia Icon Cæleste*, containing an absolute piece of *Astronomy*, shewing how to calculate the *Motions* of the *Planets* both in *Longitude* and *Latitude*, by exact *Tables* calculated from the most rationall *Hypothesis*, and the *Trigonometrical* calculation, of their secondary motions.

By *Vincent Wing*, Student in *Astronomy*.



The common Notes and movable Feasts according to the account in *England*.

English account 1651.			Roman account 1651.
	18	The Golden number.	18
	8	The circle of the Sun.	8
	18	The Epact.	8
	☾	The Dominical Letter	3
February	9	Shrove Sunday.	19 February.
March	30	Easter day.	9 April.
May	4	Rogation Sunday.	14 May.
May	8	Ascension day.	18 May.
May	18	Whitsunday.	28 May.
November	30	Advent-sunday.	3 December.

The Anatomy of mans body, as the parts thereof are by Astrologers attributed unto the 12 signes of the Zodiack.

♈ Head and face.

♊ Neck and throat.
♋ Breast, stomach & ribs
♌ Bowels and belly.
♍ Secret members.
♎ Knees.



♊ Armes and shoulders
♋ Heart and back.
♌ Reins and loynes.
♍ Thighes.
♎ Legges.

♏ The Feet.

A Table for the right Ascension, Declination of some of their fixed Starres with their
Semidiurnal Arch calculated for the
Meridian of *Sandwich*.

Names of the Starres	Declinati.	Right Asc.	Semidur. arch
	D. M.	H. M. S.	H. M. S.
Head of <i>Meauza</i>	39 36 N.	2 45 44	Sets not
Brightest of 7. starres	24 18 N.	3 25 16	8 17 16
<i>Aldebaran</i> the Bulls eye	15 49 N	4 15 56	7 22 52
<i>Hircus</i> , the Goat.	45 36 N	4 50 57	Sets not
<i>Syrus</i> , the great dogge	16 13 S	6 29 50	4 34 52
<i>Procyon</i> , the lesser dog	6 6 N	7 21 9	6 30 40
The North <i>Ajelli</i>	12 42 N	8 22 40	8 5 52
The South <i>Ajelli</i>	19 19 N	8 24 36	7 43 40
Heart of <i>Hidra</i> .	7 8 S	9 10 16	5 24 0
The Lyons heart	13 42 N	9 49 0	7 10 52
The Lyons taile	16 34 N	11 29 52	7 27 12
The Virgins spike.	9 16 S	13 17 48	5 13 0
<i>Arcturus</i>	21 6 N	13 58 44	7 55 12
The Scorpions heart called <i>Antares</i> .	25 33 S	16 7 48	3 21 24
<i>Hercules</i> head	14 53 N	16 58 0	7 21 32
The Swans taile	44 5 N	20 38 7	Sets not
<i>Pegasus</i> wing.	13 20 N	22 46 43	7 8 56

In this Table in the Colume of the declination N. stands for North and S. for South. The use of this Table is laid down in the fourth Proposition in the Introduction before, I need not to explaine it farther.

A Tide Table shewing at what time it will
be high water in any of these places here-
under mentioned.

Q	Uinbrough, Southampton,	h.	m.
	Portsmouth, Ile of Wighr,	12	0
	Beachy, Kentish knock, Spits.		
	Rochester, Maldon, Aberden,	0	45
	Gravesend, Downes, Runney, Thanet,	1	30
	Dundee, St. Albion, Lisbon,	2	15
	London, Tinnmouth, Hartlepoole,		
	Amsterdam, Brittain, Galizia	3	0
	Barwick, Flamborough head	3	45
	Scarborough qu. Severn	4	30
	Newcastle, Humber, Dartmouth,	5	15
	Plimouth, Weymouth, Hull, Lin,		
	Antwerp, Davids head,	6	0
	Bristol, Foulness, at the starr,	6	45
	Milford, Bridgwater, Landsend,	7	30
	Portland, Harflew, the Hague, Dublin,	8	15
	Poole, St. Hellen, Man Ile	9	0
	Needles, North and South foreland,	9	45
	Yarmouth, Dover, Calice rode, Sandwich	10	30
	Rye, Winchelsey, Gorend, Thames, Rhodes,	11	15

This Table shewes the time of full Sea in any of these places, by adding the houres and minutes against these places to the time of the Moons Southing found in the blank page of this *Ephemeris* or Almanack. For example, you require to know the time of full Sea at *Gravesend* the first day of *January*, you finde the time of the Moons Southing that day to be at 3. min. after 3. of the clock in the morning, to which add 1. hour 30 min. to 33 min. after 4. of the clock in the morning *Jan. 1.*

The Spring Quarter

Begins when the Sun enters into the first point of *Aries*, which in our Meridian of *Sandwich* will be this yeer 1651. will be upon Munday the tenth of *March*, 53 min. past one of the clock in the after noone,

Summer

Begins when the Sun enters into *Cancer*, which will be upon Wednesday *June* 11. ten min. past five of the clock in the afternoone.

Autumne

Begins when the Sun enters into *Libra*, which will be upon Saturday the 13 day of *September*, 56 min. past 7. of the clock in the morning.

Winter

Begins when the Sun enters into *Capricorne*, which will be upon Wednesday the eleventh of *December*, 33 minutes past 7 of the clock at night.

Of the Ecclipses

There will this yeere be two Ecclipses of the Sun, the one upon the ninth day of *April*, at ten of the clock at night, the other upon the fourth day of *October*, halfe an houre past one of the clock in the afternoone, but neither of them seene with us, and therefore I forbear farther.

There will be no Eclipse of the Moone.

A brief and necessary Computation of yeers

D uke William conquered England	585
The invention of Guns	273
The invention of Printing	211
The infectious sweating sicknes	94
The Great Massacre in France	90
Pauls steeple was set on fire	90
The fiery Apparition in the heavens	77
The generall Earthquake in England	71
The great Snow	71
The Spanish fleet, 1588	63
The Camp at Tilbury in Essex	62
The Gunpowder Treason, November 5.	46
The Comet or blazing Star, from November 18. to December 16. 1618.	33
The great Plague in London. 1625	26
The last great Earthquake in England	25
The Duke of Buckingham murdered	23
The third part of London Bridge burnt	19
This present Parliament began Novemb. 3. 1640.	11
The Earl of Strafford beheaded on Tower hill May 12. 1641.	10
The Irish Rebellion began October 23. 1641.	10
King Charles went from his Parliament, Janu 10.	10
King Charles set up his Standard at Nottingham	10
The fight at Kenton, October 22. 1642.	9
The fight at Brainford, Novemb. 12. 1642.	9
Cheapside Crosse demolished, May 2. 1643.	8
The taking of the Scots Covenant in England	8
The fight at Newbury	7
The great fight at York	7
The Bishop of Canterbury was beheaded Janu. 10. 1644.	7
The fight at Marston, June 4. 1645.	6
King Charles was beheaded, January 30.	2
Duke Hambleton, Earle of Holland and Lord Capel was beheaded, March 9. 1649.	2

Since

January hath xxxi. dayes.

Last quar. 4 day. 45 min. past 8 p.m. hie winds and some cold

New Moon, 11 day, 49 min. p.m. Rain like.

First quarter, 18 day, 8 min. a.m. cold frosty weather.

Full Moon, 26 day 44 min. past 3 p.m. faire and dry.

1	a	Revears day	21	vp	23	mp	11	29	11	d
2	b		22		24		23	55	12	e
3	c		23		26	≈	6	48	13	f
4	d		24		27		19	58	14	g
5	e		25		28	m	3	25	15	a
6	f	Epiphany	26		29		17	19	16	b
7	g		27		30	†	1	40	17	c
8	h		28		31		16	33	18	d
9	i		29		32	vp	1	28	19	e
10	a		0	≈	33		16	33	20	f
11	b		1		34	≈	1	14	21	g
12	c	1 Sun. af. Epiph.	2		36		15	52	22	a
13	d	Hillary.	3		37	✕	0	30	23	b
14	e		4		38		15	1	24	c
15	f		5		39		29	3	25	d
16	g		6		40	✓	12	36	26	e
17	h		7		41		25	47	27	f
18	i		8		42	♂	8	46	28	g
19	a	2 Sun. af. Epiph	9		43		21	31	29	a
20	b	O&ab. Hillar.	10		44	II	4	8	30	b
21	c		11		45		16	12	31	c
22	d		12		46		27	55	Feb.	d
23	e	Terme begin.	13		47	☉	9	28	2	e
24	f		14		48		21	6	3	f
25	g	Gonvers. Paul	15		49	Ω	2	59	4	g
26	h	Septuages.	16		50		14	58	5	a
27	i	Quind. Hillar.	17		50		28	58	6	b
28	a		18		51	mp	8	58	7	c
29	b		19		52		21	2	8	d
30	c		20		52	≈	3	27	9	e
31	d		21		53		16	19	10	f

Day } 10 } The Dragons head in } 4 degr. 31 min.
 } 20 } } 4 3
 } 30 } } 3 31
 } } } 2 59

1	3 M	3	Moon South at <i>Sandwich</i>
2	3	46	Orions girdle riseth at night, troubled aire.
3	4	32	South winds and some
4	5	15	cold raine
5	6	4	or snow about
6	6	56	these dayes.
7	7	52	
8	8	53	<i>Lucida Corona</i> sets at night.
9	9	55	
10	10	59	
11	11	59	
12	0 A	56	<i>Aselli & } set morn.</i>
13	1	50	<i>Præsepe</i> }
14	2	41	
15	3	30	
16	4	18	<i>Canis minor</i> , ariseth morn.
17	5	5	
18	5	52	
19	6	39	
20	7	20	
21	8	19	
22	9	7	
23	9	55	
24	10	42	
25	11	30	
26	12	14	<i>Canis major</i> riseth at night.
27	0 M	14	
28	0	56	
29	1	38	<i>Aquila</i> sets at night. Wet & tempest with <i>Prolo.</i>
30	2	28	
31	3	6	

February hath xxviii. dayes.

Last quarter, 3 day, 13 min. past 8 a.m. rain like & windy
 New Moon 9 day, 20 min. past 11 . p.m. cold & snow like
 First quarter, 17 day, 8 min. past 6 a.m. winds & raine.
 Full Moon, 25 day, 13. min. past 9 a.m. cold and dry.

1	D		22	☾	54	☿	29	34	11	B
2	E	Purif. Mary.	23		55	♈	12	57	12	A
3	F	☐☉☾ 8 an.mc.	24		55		26	58	13	b
4	G		25		56	♉	10	58	14	c
5	A		26		56		25	15	15	d
6	B		27		57	♊	10	23	16	e
7	C		28		57		25	25	17	f
8	D		29		57	☾	10	25	18	G
9	E	Shrove sund.	0	✕	58		24	50	19	A
10	F		1		58	✕	9	4	20	b
11	G		2		59		23	11	21	c
12	A	Terme ends	3		59	♋	7	8	22	d
13	B		4		59		20	40	23	e
14	C		5		59	♌	3	43	24	f
15	D		6		59		16	28	25	G
16	E	1 Sund. in Lent.	7		59		29	13	26	A
17	F	☐☉☾ 6 mor.	9		0	♍	11	50	27	b
18	G		10		0		24	22	28	c
19	A		11		0	♎	6	34	Mar	d
20	B		12		0		18	22	2	e
21	C		13		0	♏	0	4	3	f
22	D		14		0		11	43	4	G
23	E	2 Sund. in Lent.	25		0	♐	23	43	5	A
24	F	Matthias Ap.	16		0		5	59	6	b
25	G		17		0		18	20	7	c
26	A		17		59	♑	0	43	8	d
27	B		18		59		13	15	9	e
28	C		19		59		26	14	10	f

Day { ¹₁₀²₂₀³₂₈ } The Dragons head in { ¹₂²₁³₁ } 2 degr. 53. min.
 24 24
 52 26

1 3 M 54 Moon South at *Sandwich*.
 2 4 43 *Cor Leonis* riseth in the evening. Likewise *Cor*
 3 5 36 Ω sets in the morning, North winds and often
 4 6 33 rain. *Ptolomey*.

5 7 35
 6 8 39
 7 9 42
 8 10 42
 9 11 36 $\odot \odot \text{C}$ 11 night.

10 0 A 26
 11 1 17 The Dolphins taile sets in the evening. *Pto*.
 12 2 7 *lomey* saith winds and snow, but rain if winds be
 13 2 53 South.

14 3 42
 15 4 29
 16 5 18
 17 6 11
 18 7 2

19 7 53
 20 8 42
 21 9 29
 22 10 15
 23 11 0

24 11 45
 25 12 29 $\odot \odot \text{C}$ 9 morn.

26 0 M 29
 27 1 12
 28 1 56

March hath xxxi. dayes.

Last quarter, 4 day, 15 min. past 5 p.m.

Faire and plea.

New Moon, 11 day, 17 min. past 10 a.m.

sant weather

First quarter, 19 day, 11 min. past 1 morn.

most part of

Full Moon, 26 day, 30 min. past 11. at night.

this month.

1 D	David Bish.	20	✕	59	m	9	38	11	g
2 ☾	3 Sund. in Lent.	21		59		23	25	12	a
3 f		22		59	†	7	16	13	b
4 g		23		59		21	7	14	c
5 a		24		58	vp	5	11	15	d
6 b		25		57		12	44	16	e
7 c		26		57	≈	4	19	17	f
8 D		27		56		19	40	18	g
9 ☾	4 Sund. in Lent.	28		56	✕	4	12	19	a
10 f		29		55		18	10	20	b
11 g		0	γ	54	γ	1	52	21	c
12 a		1		54		15	26	22	d
13 b		2		53		28	49	23	e
14 c		3		52	♂	11	50	24	f
15 D		4		52		24	25	25	g
16 ☾	5 Sund. in Lent.	5		51	II	6	40	26	a
17 f		6		50		19	0	27	b
18 g		7		49	♂	1	31	28	c
19 a		8		48		14	3	29	d
20 b		9		47		26	26	30	e
21 c		10		46	Ω	8	28	31	f
22 D		11		45		20	20	Apr.	g
23 ☾	Palme Sund.	12		44	Ⓜ	2	17	2	a
24 f		13		43		14	34	3	b
25 g	Annun. Mary	14		42		27	11	4	c
26 a		15		41	II	10	0	5	d
27 b		16		40		32	55	6	e
28 c		17		39	m	6	0	7	f
29 D		18		37		19	32	8	g
30 ☾	Easter day.	19		36	†	3	37	9	a
31 f		20		34		18	3	10	b

Day	10	The Dragons head in γ The Dragons head in γ	0 degr. 55 min.
	20		0 degr. 23 min.
	30		29 degr. 52 min.

1 2 M 42 Moon South at Sandwich,

2 3 31

3 4 25

4 5 21

5 6 18

6 7 19

7 8 20

8 9 19

9 10 20

10 11 14

11 0 A 3

12 0 52

13 1 39

14 2 27

15 3 16

16 4 6

17 4 56

18 5 50

19 6 42

20 7 37

21 8 20

22 9 5

23 9 49

24 10 32

25 11 16

26 12 1

27 0 M 1

28 0 47

29 1 36

30 2 28

31 3 23

Arcturus riseth in the evening. *Pluviae & imbres,*
nonnunquam grandines procellasque adfert. Car-
danus saith, Swallows now come and the Spring
appears.

Spica Virginis sets in the morning.

Aprill hath xxx. dayes.

Last quarter, 2 day, 2 min after 11 at night. Temperate and
 New Moon, 9 day, 4 min. after 10 at night. hot and dry
 First quarter, 17 day, 29 m. after 7 at night. most part of
 Full Moon, 25 day, 5 2 min. past 10 morn. this month.

1	g		21	✓	33	Wp	2 25	11	c
2	a		22		32		16 34	12	d
3	b		23		30	☞	0 43	13	e
4	c		24		29		14 49	14	f
5	d		25		27		29 19	15	g
6	e	Ides Sunday.	26		26	✕	13 48	16	a
7	f		27		24		17 48	17	b
8	g		28		22	✓	11 13	18	c
9	a		29	♂	21		24 19	19	d
10	b		0	♂	19	♂	7 17	20	e
11	c		1		17		20 7	21	f
12	d		2		15	II	2 44	22	g
13	e	2 Sun. aft. East.	3		14		14 47	23	a
14	f	Quind. Pasch.	4		12		26 52	24	b
15	g		5		10	☉	8 48	25	c
16	a	Terme begins	6		8		21 1	26	d
17	b		7		6	Ω	3 30	27	e
18	c		8		4		16 1	28	f
19	d		9		2		28 25	29	g
20	e	3 Sun. after East.	10		0	☾	10 34	30	a
21	f	Tres Pasch.	10		58		22 53	May	b
22	g		11		56	☽	5 33	2	c
23	a		12		54		18 47	3	d
24	b		13		52	m	2 1	4	e
25	c	Dark ebang.	14		50		15 30	5	f
26	d		15		48		29 10	6	g
27	e	4 Sun. after East	16		46	†	13 15	7	a
28	f	Mens. Pasch.	17		44		27 54	8	b
29	g		18		41	Wp	12 38	9	c
30	a		19		39		27 43	10	d

Day { ¹⁰₂₀₃₀ } Dragons head in V { ²⁹₂₈₂₈ degr. ¹⁷₄₅₁₃ min.

1 4M 23 Moon South at Sandwich.

2	5	23
3	6	23
4	7	20
5	8	17
6	9	12
7	10	4
8	10	54
9	11	40
10	0A	28
11	1	16
12	2	6
13	2	54
14	3	46
15	4	36
16	5	26
17	6	16
18	7	5
19	7	51
20	8	34
21	9	18
22	10	2
23	10	48
24	11	35
25	12	26
26	0M	16
27	1	20
28	2	17
29	3	20
30	4	20

May hath xxxi. dayes,

Last quar. 2 day, 52 min. past 3 morn. much windy weather
 New Moon, 9 day, 48 min. past 10 morn. more temperate,
 First quar. 17 day, 30 min past noon. like to be very faire
 Full Moon, 24 day, 52 min past 7 at night. weather to the
 Last quarter, 31 day, 30 min, past 9 morn. months end.

1	b	Phil. & Jacob	20	8	37	☿	12	1	11	e
2	c		21		35		26	0	12	f
3	d		22		32	☿	9	53	13	g
4	e	Rogat. Sund.	23		30		23	49	14	a
5	f	Quind Pasch.	24		27	☿	7	36	15	b
6	g		25		25		20	59	16	c
7	a		26		23	☿	3	54	17	d
8	b	Ascension Day.	27		20		16	23	18	e
9	c	Craft Ascen.	28		18		28	50	19	f
10	d		29		15	☿	11	14	20	g
11	e	6 Sun. after East.	0	II	13		23	28	21	a
12	f	Terme ends	1		10	☿	5	24	22	b
13	g		2		8		17	7	23	c
14	a		3		5		28	46	24	d
15	b		4		3	☿	10	44	25	e
16	c		5		0		23	6	26	f
17	d		5		57	☿	5	42	27	g
18	e	Whitesunday	6		55		18	21	28	a
19	f		7		52	☿	0	57	29	b
20	g		8		49		13	43	30	c
21	a		9		47		26	49	31	d
22	b		10		44	☿	10	27	June	e
23	c		11		41		24	23	2	f
24	d		12		39	☿	8	28	3	g
25	e	Trinity sunday	13		36		22	41	4	a
26	f	Craft. Trinit.	14		33	☿	7	12	5	b
27	g		15		30		22	8	6	c
28	a		16		27	☿	7	20	7	d
29	b	Corpus Christi	17		25		22	18	8	e
30	c	Terme begins	18		22	☿	6	44	9	f
31	d		19		19		20	37	10	g

Day {¹⁰₂₀³⁰} Dragons head in γ {²⁷₂₇¹⁰₂₆ } 27 degr. 41 min.
38

1 5 M 24 Moon South at Sandwich,

2 6 21
3 7 14
4 8 3
5 8 44
6 9 40
7 10 29
8 11 16
9 0 A 2
10 0 52
11 1 42
12 2 31
13 3 20
14 4 7
15 4 54
16 5 40
17 6 26

18 7 9 24 Day, the Eagle ariseth in the evening, pre-
19 7 55 sently after the Moon is at the full in our Me-
20 8 39 ridian, which Cardane saith, hapning thus at the
21 9 25 new or full moon all kinds of fruits are hurt
22 10 15 with wormes and caterpillars; consequently it is
23 11 9 like to be a hot and dry summer and little fruit;
24 12 6 This may be likewise very probable, if you cast
25 0 M 6 your eyes upon the Eclipse of the moon which
26 1 5 hapned the 29 of October 1650 which was in 18
27 2 5 degr. of γ whose effects begin not till 30 Aug.
28 3 7 1651 and Proclus saith *satorum seminumque fle-*
29 4 8 *relitatem immittit* : a great scarcity of grain
30 5 5 and fruit and of things sown. *Præmonitus præ-*
31 5 59 *munitus.* B

June hath xxx. dayes.

New Moon, 8 day, 29 min. before 1 morn. hot, rain like.
 First quarter, 16 day, 17 min. past 3 morn. not, thunder like.
 Full Moon 23 day 12 min past 3 morn. more temperate.
 Last quar, 29 day, 39 min. past 5 att. noon. hot & dry weather

1	☉	1 Sun. aft Trin.	20	II	16	V	4	13	11	a
2	f	Octab. Trin.	21		13		17	39	12	b
3	g		22		11	♄	0	50	13	c
4	a		23		8		13	30	14	d
5	b		24		5		26	1	15	e
6	c		25		2	II	8	5	16	f
7	d		25		59		10	7	17	g
8	☉	2 Sun. aft Trin.	26		56	☉	2	7	18	a
9	f	Quind. Trin.	27		53		14	6	19	b
10	g		28		50		25	57	20	c
11	a		29		48	♌	7	33	21	d
12	b		0	☉	45		19	7	22	e
13	c		1		42	♍	1	1	23	f
14	d		2		39		13	12	24	g
15	☉	3 Sun. aft Trin.	3		36		25	50	25	a
16	f	Tres Trinit.	4		33	♎	8	43	26	b
17	g		5		30		21	41	27	c
18	a	Terme ends	6		27	♏	4	55	28	d
19	b		7		24		18	32	29	e
20	c		8		21	♐	2	40	30	f
21	d		9		18		17	11	July	g
22	☉	4 Sun. aft Trin.	10		16	♑	1	45	2	a
23	f		11		13		16	20	3	b
24	g	S. John Bapt.	12		10	♒	1	5	4	c
25	a		13		7		16	6	5	d
26	b		14		4	♋	1	11	6	e
27	c		15		1		16	0	7	f
28	d		15		58	V	0	15	8	g
29	☉	Peter & Paul.	16		56		14	0	9	a
30	f		17		53		27	24	10	b

Day { ¹⁰
 ²⁰ } Dragons head in γ { ²⁶ deer. 3 min.
 ³⁰ } { ²⁵ 31
 { ²⁵ 0

1	6M	48	Moon south at <i>Sandwich</i> .
2	7	35	
3	8	22	
4	9	9	
5	9	57	The lesser dog sets in the evening.
6	10	45	
7	11	32	
8	0 A	21	
9	1	12	
10	2	0	
11	2	46	
12	3	30	
13	4	9	
14	4	57	
15	5	40	
16	6	24	
17	7	10	
18	7	58	
19	8	50	
20	9	46	
21	10	43	
22	11	44	
23	12	45	
24	0 M	45	
25	1	46	
26	2	45	
27	3	43	
28	4	35	
29	5	25	
30	6	13	

July hath xxxi. dayes.

New Moon, 7 day, 6 min. after 7 afternoon. Pleasant and
 First quarter, 15 day, 0 min. past 4 afternoon. temperate,
 Full Moon, 22 day, 9 min. past 10 morn. with fresh gales
 Last quarter, 29 day, 16 min. past 10 morn. of wind.

1	g	18	☾	50	♂	10	30	11	c
2	a	19		47		23	18	12	d
3	b	20		44	♂	5	39	13	e
4	c	21		41		17	38	14	f
5	d	22		39		29	24	15	g
6	e	23	6 Sun. aft. Trin,	36	☾	11	8	16	a
7	f	24		33		23	0	17	b
8	g	25		30	♂	4	53	18	c
9	a	26		27		16	39	19	d
10	b	27		24		28	17	20	e
11	c	28		21	♂	9	55	21	f
12	d	29	7 Sun. aft. Trin.	18		21	52	22	g
13	e	0		15	☾	4	8	23	a
14	f	1		12		16	49	24	b
15	g	2		9		29	48	25	c
16	a	3		6	♂	13	0	26	d
17	b	4		4		26	45	27	e
18	c	5		1	♂	10	53	28	f
19	d	5	Dog day be.	59		25	28	29	g
20	e	6	8 Sun. aft. Trin.	56	♂	10	25	30	a
21	f	7		54		25	19	31	b
22	g	8		51	☾	9	54	Aug	c
23	a	9		49		24	47	2	d
24	b	10		46	♂	9	36	3	e
25	c	11	St. James Ap.	43		24	21	4	f
26	d	12		40	♂	8	44	5	g
27	e	13	9 Sun. aft. Trin.	38		22	37	6	a
28	f	14		35	♂	6	4	7	b
29	g	15		32		19	12	8	c
30	a	16		30	♂	2	10	9	d
31	b	17		28		14	46	10	e

Day	{ 10 }	The Dragons head in γ	{	24 degr. 28 min.
	10			23 degr. 56 min.
	{ 36 }			23 degr. 25 min.

1	7	M	0	Moon south at Sandwich
2	7		48	
3	8		38	Orions girdle ariseth Cosmical.
4	9		25	<i>Virgilius, primo - Aeneid.</i>
5	10		15	<i>Cum subito assurgens fluctu nimbosus Orion,</i>
6	11		4	and another saith, <i>Excitat ventos turbulentos &</i>
7	11		52	<i>tempestates, quæ ob sideris amplitudinem plures</i>
8	0	A	41	<i>dies perdurant.</i>
9	1		24	
10	2		8	
11	2		50	
12	3		31	
13	4		13	
14	4		57	
15	5		44	
16	6		33	
17	7		26	
18	8		24	
19	9		24	
20	10		27	
21	11		29	
22	12		28	
23	0	M	28	
24	1		25	The last day the great dog ariseth Cosmical
25	2		19	with the Sun, at which time the noon is in Ge-
26	3		12	mini; And <i>Diaphanes</i> saith, That if at this rising
27	4		3	the moon be in <i>Gemini</i> , it presages plague and
28	4		52	pestilence that yeer: but I like well of <i>Stadius</i> ,
29	5		41	who saith, Those Prognostications are more
30	6		31	substantial, which be taken <i>ex variis cominxi-</i>
31	7		21	<i>onum causis.</i>

August hath xxxi. dayes.

New Moon, 6 day, 32 min. past 6 morn.
 First quarter, 14 day, 42 min. aft. 2 morn.
 Full Moon, 20 day, 32 min. past 5 aft noon.
 Last quar. 27 day, 48 min. past 9 at night.

great heat most part
 of this month, yet
 perhaps abated
 with the wind at
 months end.

1	c		18	Ω	26	II	26	57	11	f
2	d		19		24	☾	8	45	12	g
3	e	10 Sun. aft. Trin.	20		22		20	25	13	a
4	f		21		20	Ω	1	58	14	b
5	g		22		18		13	45	15	c
6	a		23		15		25	39	16	d
7	b		24		13	☿	7	33	17	e
8	c		25		11		19	24	18	f
9	d		26		8	☿	1	16	19	g
10	e	11 Sun. aft. Trin.	27		6		13	26	20	a
11	f		28		4		26	1	21	b
12	g		29		2	☿	8	58	22	c
13	a		0	☿	1		22	16	23	d
14	b		0		59	♄	5	43	24	e
15	c		1		57		19	34	25	f
16	d		2		55	☿	3	56	26	g
17	e	12 Sun. aft. Trin.	3		53		18	51	27	a
18	f		4		51	☿	3	54	28	b
19	g		5		49		18	10	29	c
20	a		6		47	☿	2	42	30	d
21	b		7		45		17	2	31	e
22	c		8		44	☿	1	22	Sep.	f
23	d		9		42		15	29	2	g
24	e	Barthol. Apo.	10		40		29	44	3	a
25	f		11		38	☿	13	10	4	b
26	g		12		36		26	15	5	c
27	a		13		35	II	8	57	6	d
28	b	Dog days end.	14		33		21	15	7	e
29	c		15		31	☾	4	2	8	f
30	d		16		29		16	39	9	g
31	e	14 Sun. aft. Trin.	17		27		28	36	10	a

Day	{ 10 }	Dragons head in γ	{ 22 degr. 51 min.
	{ 20 }		{ 22 degr. 20 min.
	{ 30 }		{ 21 degr. 50 min.

1 8 M 12 Moon South at Sandwich.

2	9	4
3	9	53
4	10	40
5	11	28
6	0 A	9
7	0	52
8	1	34
9	2	15
10	2	17
11	3	43
12	4	30
13	5	21
14	6	15
15	7	12
16	8	12
17	9	15
18	10	17
19	11	13
20	12	7
21	0 M	7
22	0	59
23	1	49
24	2	40
25	3	31
26	4	23
27	5	13
28	6	5
29	6	55
30	7	48
31	8	41

September hath xxx. dayes.

New Moon, 4 day, about 10 at night. Temperate.
 First quarter, 12 day, a little before noon. Somewhat hotter,
 Full Moon, 19 day, 34 min. past 2 morn. mild weather.
 Last quarter, 26 day, 45 min. past noon. to the months end.

1 f		18 ♄ 25	♏ 11 1	11	b
2 g		19 24	22 43	12	c
3 a		20 22	♄ 4 26	13	d
4 b		21 20	16 36	14	e
5 c		22 19	28 52	15	f
6 d		23 18	♏ 10 58	16	g
7 ☉	15 Sun. aft. trin.	24 17	23 17	17	h
8 e		25 16	♄ 5 43	18	a
9 g		26 14	18 42	19	b
10 a		27 13	♄ 2 22	20	c
11 b		28 12	15 53	21	d
12 c		29 11	29 48	22	e
13 d		0 ♏	♄ 13 37	23	f
14 ☉	16 Sun. aft. trin.	1 9	27 50	24	g
15 e		2 8	♏ 13 8	25	h
16 g		3 7	27 57	26	a
17 a		4 6	♄ 12 51	27	b
18 b		5 5	27 17	28	c
19 c		6 4	♄ 11 11	29	d
20 d		7 3	24 58	30	e
21 ☉	St. Matth. Ep.	8 2	♄ 8 52	♏	f
22 e		9 1	22 17	2	g
23 g		10 0	♏ 5 14	3	h
24 a		10 59	17 41	4	a
25 b		11 59	♄ 0 14	5	b
26 c		12 58	12 36	6	c
27 d		13 57	25 17	7	d
28 ☉	18 Sun. aft. trin.	14 57	♏ 7 47	8	e
29 e	Michael	15 56	19 54	9	f
30 g		16 56	♄ 11 9	10	g

Day	{ 10 20 30	The Dragonshead in V	{	21 degr. 16 min.
				20 degr. 45 min.
				20 degr. 15 min.

1 9 M 29 Moon South at Sandwich.

2	10	19
3	11	3
4	11	46
5	0 A	29
6	1	7
7	1	50
8	2	35
9	3	25
10	4	18
11	5	15
12	6	14
13	7	11
14	8	11
15	9	11
16	10	9
17	11	3
18	11	55
19	12	43
20	0 M	43
21	1	33
22	2	24
23	3	15
24	4	7
25	4	58
26	5	51
27	6	42
28	7	35
29	8	24
30	9	12
H.		M.

October hath xxxi. dayes.

New Moon, 4 day, 27 min. past 1 aft. noon. Some winds and
 First quarter, 11 day, 40 min. past 5 aft. noon. cold weather
 Full Moon, 18 day, 44 min. past 1 aft. noon. cold winds,
 Last quar. 26 day, 37 min. past 8 morn. more mild, & temp.

1 a		17 ☽	56	13 15	11	d
2 b		18	55	25 14	12	e
3 c		19	55	7 32	13	f
4 d		20	54	20 16	14	g
5 e	19 Sun. aft. trin.	21	54	m 2 50	15	a
6 f		22	54	15 34	16	b
7 g		23	54	28 35	17	c
8 a		24	54	12 27	18	d
9 b		25	53	25 25	19	e
10 c		26	53	10 53	20	f
11 d		27	53	24 43	21	g
12 e	20 Sun. aft. trin.	28	53	8 32	22	a
13 f		29	53	22 43	23	b
14 g		0 m	53	7 36	24	c
15 a		1	53	22 25	25	d
16 b		2	53	6 50	26	e
17 c		3	53	20 38	27	f
18 d	Luke Evang.	4	53	4 7	28	g
19 e	21 Sun. aft. trin.	5	53	17 20	29	a
20 f	Tres. mich.	6	54	II 0 30	30	b
21 g		7	54	13 20	31	c
22 a		8	54	25 45	No.	d
23 b	Tetm begins.	9	54	8 1	2	e
24 c		10	55	20 13	3	f
25 d		11	55	2 19	4	g
26 e	22 Sun. aft. trin.	12	56	14 35	5	a
27 f	menf. mich.	13	56	26 56	6	b
28 g	Simon & Jude	14	56	9 36	7	c
29 a		15	57	21 27	8	d
30 b		16	57	3 38	9	e
31 c		17	58	15 52	10	f

{ 10 }
 Day { 20 } The Dragons head in { 19 degr. 43 min.
 { 39 } { 19 degr. 12 min.
 { 18 degr. 42 min.

1 9 M 32 Moon South at Sandwich.

2 10 35
 3 11 17
 4 12 0
 5 0 A 44
 6 1 30
 7 2 20
 8 3 17
 9 4 11
 10 5 17
 11 6 15
 12 7 9
 13 8 5
 14 8 58
 15 9 51
 16 10 43
 17 11 31
 18 12 20
 19 0 M 20
 20 1 9
 21 2 2
 22 2 53
 23 3 45
 24 4 36
 25 5 17
 26 6 15
 27 7 2
 28 7 45
 29 8 34
 30 9 16
 31 9 57

November hath xxx. dayes.

New Moon, 3 day, 50 min. past 3 morn. Lilke to be raine,
 First quar. 9 day, 34 min. after 11 at night. or snow, and like
 Full Moon, 17 day, 16 min. past 3 morn. to be cold, frosty
 Last quarter, 25 day, 30 min. past 4 morn. dry weather.

1 D	All Saints	18 m	59	☾ 28	52	11	g
2 C	Om. animarum.	19	59	m 11	51	12	a
3 f	Quind. mich.	20	0	25	2	13	b
4 g		21	1	† 8	21	14	c
5 a	Papist Conspi.	22	1	22	0	15	d
6 b		23	2	☿ 6	9	16	e
7 c		24	3	20	40	17	f
8 d		25	4	☿ 5	36	18	g
9 C	24 Sun. aft. trin.	3	5	19	54	19	a
10 f	Tres michaelis.	27	5	✕ 3	52	20	b
11 g	Mart. Bish.	28	6	17	51	21	c
12 a	Craftin. Marr.	29	7	✓ 2	0	22	d
13 b		1	† 8	16	26	23	e
14 c		2	9	♂ 0	15	24	f
15 d		3	10	13	34	25	g
16 C	25 Sun. aft. trin.	4	11	26	26	26	a
17 f		5	12	II 9	8	27	b
18 g	Octab. mart.	6	13	21	48	28	c
19 a		7	14	☿ 4	13	29	d
20 b		8	15	16	23	30	e
21 c		9	16	28	18	Dec	f
22 d		10	17	♂ 10	4	2	g
23 C	26 Sun. aft. trin.	11	18	22	0	3	a
24 f		12	19	☿ 4	22	4	b
25 g	Quind. marr.	13	20	16	56	5	c
26 a		14	22	29	30	6	d
27 b		15	23	☾ 11	52	7	e
28 c	Terme ends	16	24	24	18	8	f
29 d		17	25	m 7	4	9	g
30 C	Advent Sund.	18	26	20	6	10	a

{ 10 }		{ 18 degr. 9 min.
Day { 20 }	The Dragons head in V	{ 17 degr. 41 min.
{ 30 }		{ 17 degr. 11 min.

10 M40 Moon south at *Sandwich*.

2	II	26
3	O	A14
4	I	13
5	2	11
6	3	10
7	4	11
8	5	12
9	6	6
10	6	58
11	7	48
12	8	37
13	9	23
14	10	12
15	11	1
16	11	51
17	12	41
18	O	M41
19	I	32
20	2	24
21	3	13
22	4	2
23	4	47
24	5	32
25	6	16
26	7	1
27	7	45
28	8	28
29	9	10
30	9	55

The Pleyades set cosmical, if then it be cloudy.
likely to be a wet winter, if fair a sharp winter.

Sandwich Fayr begins upon the 24 day.

St. Andrews Apost.

December hath xxxi. dayes.

New Moon, the 2 day, 10 min. past 5 at night. Fair dry wea
 First quarter, 9 day, 17 min. past 7 mo: n. Like to snow.
 Full Moon, 16 day, 48 min. past 8 at night. or cold rain.
 Last quarter, 24 day, 32 min. past 11 night. with cold winds.

1 f		19 ♀	28	♀	3 52	11	b
2 g		20	29		17 38	12	c
3 a		21	30	♂	1 32	13	d
4 b		22	31		15 45	14	e
5 c		23	33	☿	0 26	15	f
6 d		24	34		15 28	16	g
7 e	1 Sun. aft. Adv.	25	35	☿	0 30	17	h
8 f		26	36		15 9	18	i
9 g		27	38		29 7	19	k
10 a		28	39	♂	12 57	20	l
11 b		29	40		26 32	21	m
12 c		0 ♀	42	♂	10 9	22	n
13 d		1	43		23 41	23	o
14 e	2 Sun. aft. Adv.	2	44	♂	6 7	24	p
15 f		3	46		18 30	25	q
16 g		4	47	♂	0 42	26	r
17 a		5	48		12 53	27	s
18 b		6	50		25 0	28	t
19 c		7	51	♂	6 52	29	u
20 d		8	52		18 36	30	v
21 e	St. Tho. Apo.	9	53	♂	0 12	31	w
22 f		10	54		11 57	Jan.	x
23 g		11	55		24 7	2	y
24 a		12	56	♂	6 44	3	z
25 b	Matth. Christ.	13	57		19 33	4	a
26 c	Stephen Prot.	14	58	♂	2 17	5	b
27 d	John.	16	0		15 10	6	c
28 e	Innocents.	17	1		28 22	7	d
29 f		18	2	♀	12 3	8	e
30 g		19	3		26 12	9	f
31 a		20	5	♂	10 35	10	g

Day { 10 } The Dragons head in { 16 degr. 41 min.
 { 20 } { 16 degr. 11 min.
 { 30 } { 15 degr. 40 min.

1 10 M 44 Moon south at *Sandwich*.

2	11	29
3	0 A	34
4	1	44
5	2	44
6	3	43
7	4	39
8	5	31
9	6	19
10	7	8
11	7	55
12	8	43
13	9	36
14	10	25
15	11	15
16	12	6
17	0 M	6
18	0	56
19	1	44
20	2	31
21	3	15
22	3	57
23	4	38
24	5	19
25	6	3
26	6	47
27	7	32
28	8	19
29	9	11
30	10	6
31	11	4

**A Catalogue of the Latitude and difference
of Meridians of some places from the
Towne and Port of *Sandwich*.**

	Latit. D. M.		Differen. of Meri. H. M.	
<i>Amsterdam in Holland</i>	52	21	0	24 A
<i>Antwerp in Brabant</i>	51	12	0	26 A
<i>Burges in Flanders</i>	51	30	0	12 A
<i>Barwick in England</i>	55	50	0	3 S
<i>Calice in France</i>	50	28	0	5 A
<i>Carlisle Angia</i>	54	50	0	15 S
<i>Constantinople</i>	43	5	2	18 A
<i>Dover in England</i>	51	10	0	0
<i>Dublin in Ireland</i>	54	40	0	33 S
<i>Edinburgh in Scotland</i>	56	24	0	5 S
<i>Hierusalem</i>	32	10	3	10 A
<i>London</i>	51	32	0	5 S
<i>Paris in France</i>	48	40	0	9 A
<i>Prague, Bohemia</i>	50	6	1	8 A
<i>Rome</i>	42	0	1	0 A
<i>Torke</i>	53	50	0	5 S

The letter A shewes that place lies to the Eastward of *Sandwich*, and therefore the houres and minutes in this Table are to be added to the houres and minutes of the New or Full Moon found in this *Ephemeris*, &c. but the letter S. shewes the place lies Westward, and therefore to be subtracted. As if in *January* you would know when it is New Moone at *Rome*; at *Sandwich* it is New Moon upon 11 day 49 min. after 12 of the clock at noone, and looking for *Rome* in this Table I finde 1 hour 0 min. with the letter A. therefore 1. hour added to 12 makes 49 min. after 1 in the afternoon.

The Introduction to the Reader.

I Present you here with an Ephemeris for the Year of our Lord 1651. calculated for the Meridian of the Town and Port of Sandwich: Call it what you please, *An Almanack!* tis no disgrace, 'tis a study fitting the greatest Princes; We have it upon record, That Adrian the Emperour was so well learned in the Celestiall motions, that he wrote Prognostications every yeare: Indeed the World is now growne to that height of ignorance [a strange thing] That Astronomy and all the other Arts and Sciences are much disrespected; But we know that Scientia nullum habet inimicum nisi ignorantem. No such enemy to the arts and sciences as the ignorant man: As for Astronomy it is a necessary science, and a great benefit. It is a hand-maid to all the other arts and sciences, as Grammar, Rhetorick, Logick, Arithmetick, Geometry and Musick. It is a help to Philosophy, Physick, and Divinity, both to naturall and morall Philosophy, To Physick, and therefore Hypocrates saith, Cæcus medicus est qui Astronomiam nescit. He is a blind Physitian, who hath no knowledge in Astronomy. To Divinity: There are many places in the Scripture, which cannot

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not be expounded without the Knowledge of Astronomy, as the first Chapter of Genesis, the 8. 19 Psalmes, many places in the book of Iob, and diverse other places.

Before I come unto the matter I intend to handle, I shall open the gross error of some men (other wise well learned) who get a bundle of Almanacks 19. in number, and then they think need buy no more, because they imagin, when the Prime is the same the Moon returns to the same place in the Ecclyptick she was in that time 19 years before. To shew their error, I will instance in one example. This year 1651. the Prime is 18. and the Epact 18. and in the year 1670. the Prime and Epact will likewise be the same, viz. 18. And the Moon the second day of May 1651. at noon in our Meridian will be in $\approx 26^{\text{d}}. 0'. 4''$. and the Dragons head in $\vee. 28^{\text{d}}. 6'. 54''$. But Anno 1670. the Moon will be in $\approx 22^{\text{d}}. 42'. 47''$. and Ω in $\vee. 20^{\text{d}}. 37'. 7''$. An apparent error in the Moons motion $3^{\text{d}}. 17'. 17''$. in the Dragons head $7^{\text{d}}. 29'. 47''$. Whereas according to their Judgment they should be the same; and what this will prove in the Ecclypses I leave it to them. But to returne. In the fourth Column of the Ephemeris or Almanack you have the Suns Motion every day at noon in the Meridian of Sandwich. In the fifth Column the Moons

A Prognostication.

Moons motion, in the blank the motion of the Dragons head. The use of it is thus. If you would know the place of the Dragons Tyle, take the opposit signe, as if \odot or the Dragons head be in γ 3^d. the Dragons Tyle is in the opposite signe to γ .

If you desire to finde out the Moons latitude. Subtract the place of the Dragons head from the place of the Moon, to the remainder add 9. signes, and if it be above 12. signes cast away 12. and the residue is the true motion of the Moons latitude, with which enter the Table called the Canon of the Moons latitude, and there in the common angle of meeting you have her latitude and the denomination, whether North Ascending or Descending, or South Ascending or Descending. One example will make it plain, the 11 day of January at noon the Moon is in \approx 1^d. 10'. 31". and the Dragons head in γ 3^d. 59'. 45" subtract 1 signe, 3^d. 59'. 35". from 10 signes 1. 14'. 31" remains 8 signes 27^d. 14'. 56". to which add 9 signes makes 17^d. from which take 12. remains 5 sig. 27^d. 14' 56". In the tables I look for 5 signes in the head, descend downward till I come to 27 degrees, and in the common angle of meeting, you shall finde her latitude to be 4^d. 59'. 38". and the denomination South Ascending toward the South pole of the E-

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cliptick. If you will have it more exact work by the rule of Proportion.

Now I will add some Astronomicall Propositions.

I Proposition.

Given the longitude of the \odot and elevation of the pole to finde the \odot right Ascension, and difference of Ascension; whereby is found the true time of the Suns rising and setting: where an old error is opened and corrected.

Example.

The 11 day of March, the \odot enters into the first point of Aries. The \odot at noon that day is in $\times 29^d 55^l 16''$. It wants 5^l of γ .

1. For the Right Ascension.

Say alwaies by the Logarithmes

As Radius d. 1. 11.

To the tangent of the Longitude. o. 5. t. 71626964

So is the sine compl. of the greatest obliquity of the Ecliptick } 23.31.0 sc. 99623428

To the tangent of the right Ascens. o. 4. 36'. t. 71250392

2. For the difference of Ascension.

d. 1. 11. tc.

As the tangent of 66.29.0. t. 96386473

To the tangent of the Poles elevation 51.18.0. t. 0096.856

So is the sine of the right Ascension o. 4. 36.s. 71239320

To the sine of the Ascen. differen. o. 2. 59.s. 68588649

So then the difference of Ascension is $0^d 2' 59''$ in the equator, which converted into time is 12 seconds

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cords of an houre ferè; which 12". Subtracted from
 6 houres (because the Sun is as yet in a southern
 signe) remaines 5 houres 59' 48". This should
 be the estimate time of the Suns setting. Now
 to find the true time we must find the longi-
 tude of the \odot at that time His diurnall motion
 is 59 minutes: which by the table of the Houerly
 motion of the Planets makes the horary motion to
 be 2' 27". 30". which converted into thirds make
 8850". Then say. If 1 hour giue 8850". what
 5 houres 59' 48", multiply and diuide, and you
 will find 14'. 42". to be added to \times 29^d. 55'. 16".
 makes \vee 0^d. 9'. 58". that is, 10 minutes in \vee fe-
 re; for which time you may worke as before for
 the right Ascension for \vee . 0^d. 10'. and you wil find
 it to be 9 min. and consequently the difference of
 Ascension 5 minutes in the equator, which in
 time is 20 seconds of an houre, so that the Sun
 sets a little after 6. viz. 20 seconds after 6. A
 small errour ! but now I shall shew it more sensi-
 ble. Suppose the \odot should enter into \vee in the
 morning when he is in the Horizon arising, as
 he doth upon the 11 day of March this year in the
 Longitude of 263^d. that place differing in Lon-
 gitude 118^d 15' to the westward, and let the
 eleuation of the pole be the same with us 51^d 18'
 say he is in the same Latitude and Longitude
 in the Horizon arising iust at 6 of the clock, and
 that night the Sun doth not set there iust at 6. but
 1 minute after 6. though we say (but false) the
 Sun doth that day arise at 6 & sets at 6. Indeed if
 he did enter into \vee iust at 12 of the clock at noon
 any place, then it is certein, he neither ariseth
 nor sets at 6. but that as many minutes as

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he ariseth after 6. so many minutes he sets after 6. The last is evident, the former may be proved both by demonstration and operation according to the former rule. As if the Sun should enter into γ (as I said before) just at his rising in the morning, then he ariseth at six, but by 12 at noon he will be in γ Od. 15' almost, whose right Ascension in the equator is Od 14' and therefore the difference of Ascension sub lat: 5 Id 18' will be Od 10' fere; which multiplied by 4 make 0' 40" of an houre, then the Sun should set 0' 40" after 6 at which time the \odot is in γ Od 30' fere, then is the difference of Ascension 15 min. almost, which multiplied by 4 makes 60 seconds, or one minute of an houre. Thus it plainly appeareth, that though the Sun did rise at six in the morning, yet he sets 1 minute after 6. at night.

2. Proposition.

Given the Longitude of the Sun and the latitude of the place, to find the amplitude of his rising and setting.

Suppose (as before) the Sun in γ , cd. 30' and the elevation of the pole 5 Id. 18'.

As the cosine of the elevation.	51. 13. sc. 0.039514
is to the sine of the obliquity	23. 31. f. 96009201
so is the sine of the longitude	0 30. f. 79408419

to the sine of the amplitude.	0. 20 1. 77457834
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whereby we see, though in the morning he did rise full East yet he sets neer 20 minutes of a degree from the West Northward, whereas according to common account he should set due west.

3 Proposition.

The longitude and latitude of any fixed Star or any Planet being given with the poles elevation to find the Right Ascension. Ascensionall difference, declination and amplitude.

.For

A Prognostication.

1 For the Right Ascension.

Here are two rules to be observed, when you have found the first arch.

1 Rule.

If the longitude and latitude of any Star be both of one denomination, viz. either North or South, subtract the greatest obliquity of the Eccleptick from the first arch found. Then worke according to the example following.

For the third of the Pleyades γ lat $5d. 22'$. North.
called the middlemost Star γ Long. $\gamma 25d. 7'$ a North
signe, which from the beginning of γ is $55d. 7'$. Then say
As Radius

To the cotangent of the latitude.	$5d. 22'. tc. 1071453$
So is the sine of the Longitude.	$55. 7. s. 99139824$
to the tangent of an arch	$83. 28. t. 109411277$
from which subtract —————	$2. 31$ the greatest obliquity
remains a second arch	$59. 57.$ Then say
	$d. 1. co. ar.$
As the sine of the first arch.	$83. 28s. 000318296$
is to the sine of the second arch.	$59. 57. s. 99373116$
So is the tangent of the longitude	$55. 7. t. 01564568$

to the tangent of the Right Ascen. $51. 19 t. 100967980$
The Right Ascension $51d. 19'$ converted into houres are 3. houres
 $25'. 16''$

For the Ascensionall difference.

	$d. 1. tc.$
As the tangent of the second arch	$59. 57. t. 97623142$
Is to the sine of the right Ascen:	$51. 19. s. 98921354$
So is the tangent of the poles elevation	$51. 18. t. 00962856$
To the sine of the difference of Ascen:	$34. 19. s. 97510352$
Which $34d. 19'$ converted into hours, are	$2 h. 17'. 16''$
To which (because the star is in a North signe) add	$6. 0. 0.$
The totall is the semidiurnall arch of the star	$8. 17. 16.$

or the time how long it continues above our Horizon.

3. For the Declination.

As radius	$d. 1$
To the cotangent of the poles elevation.	$51. 18. tc. 99037144$
So is the sine difference of Ascen:	$34. 19. s. 97510352$
To the tangent of the declination North	$24. 18. t. 96547496$

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4. For the Amplitude.

As the cosine of the poles elevation	d 1 co.ar.
Is to the line of the declination	51.18.sc. 02039514
So is radius 90 d.	24.18. s. 96143850
To the line of the Amplitude	41. 9. s. 98183364

The amplitude is 41 d. 9'. from the East Northward : that is, it ariseth North-East and by East, and 7 d. 24'. more Northerly.

2. RULE.

If the latitude and longitude be of severall denominations, that is, If the longitude be North, and the latitude South, or longitude South, and latitude North; then if the first arch found be greater then 66d 29'. Then take that arch from 156 d. 29'. and note the remainder arch for the second arch. But if the first arch be less then 66d. 29'. then to the first arch add 23d. 31'. marke that totall for the second arch, as in this example following.

The South Aselli { lat. c d. 4'. South.
 { Long. N 3d. 47'. which is a North
 signeth that is from the beginning of *Aries*. 123d 47' which
 subtracted from 180d (because *Leo* is in the second qua-
 drant of the Signifer) remains 56d. 13'. Then say,

As radius	d 1
To the cotangent of the stars latitude	0. 4. tc. 29342137
So is the line of the longitude.	56. 13. s. 99196775
to the tangent of the first arch.	89.55.2.128538912
which according to the rule I subtract from	156.29
remainder	the second arch. 66.34.

Then say againe	d 1 co.ar.
As the line of the first arch	89. 55. s. 00000005
is to the line of the second arch	66. 34. s. 99626172
so is the tang. of the longitude.	56. 13. t. 01745606
to the tangent of the right Ascen.	53.54.t.101371783
which 53. 54. subtract from	180. 0
remains the right Ascen,	126 6 converted into houres
are 8h. 24' 36".	

2 For the Ascensionall difference.

Work as before is directed and you will find it to be 25 de. 55 min. in the equator, which converted into time is 1 hour, 43 min. 40 sec. to which add six houres, and it is 7 ho. 43 min. 40 seconds, the semidiurnall arch.

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3 For the declination.

Woꝛke as befoꝛe and you will find it 19 deg. 19 min. North.

4 For the amplitude.

You shall find it 31 deg. 56 min. from the East Northward (because it is in a North signe and declination North) that is, East North East, and 9 deg. and 26 min. more to the North.

4 Proposition.

TO find when any Star fixed; or the Moon or any other Planet comes to the South.

Subtract the right Ascension of the Sun from the right Ascension of the Star, and if subtraction cannot be made, add 24 houres to the Stars right Ascension, and then make subtraction, and the Remainder shewes how much the star comes to the South after the Sun according to the ordinary way. But that, that is not the true time you may perceiue by these ensuing examples, and the error corrected and the truth proved.

Example.

The 17 day of February I would know when Sirius or the greater dog comes exactly to the South. I find the right Ascension of the greater dog in the precedent Table to be 6 houres. 29 min. 50. sec. and the Suns place in the Ephemeris that day at noon to be in \times 9 deg. 0. min. whose right Ascension is 22 ho. 42' 24". Now because subtraction cannot be made I add 24 hours to the Stars right Ascension and it makes 30 hours. 29 min. 50. sec. from which I subtract the Suns Right Ascension 22 ho. 42 min. 24 sec. remains 7 hours, 47 min. 26 sec. and that is commonly holden the time of the Stars Southing. But to have

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have it more exact: I subtract the Right Ascension of \odot the 17 day at noon from the right Ascension the 18 day, which is 22 ho. 46 min. 9 sec. and there remaines 3 min. 45 seconds his motion in time in the equator in 24 hours, therefore his motion in an hour by the Canon is 9 seconds, 22 thirds or $562^{\frac{1}{3}}$ of an hour. When I say if 1 hour give $562^{\frac{1}{3}}$ what $47^{\circ} 26'$? Multiply and divide and you shall find 1 minute, 13 seconds to be added to the right Ascension the 17 day $22^{\text{h}} 42' 24''$ & it will be $22^{\text{h}} 43' 37''$ which subtract from 30^{h} $29' 50''$ leaves $7^{\text{h}} 46' 13''$ the true time of the Stars southing after the Sun, that is, upon the 17 day $46' 13''$ after 7 of the clock in the afternoon whereas according to the common rule, it should be at $47^{\circ} 26'$ after 7 of the clock at night. The proof of this very plain. If you would know when this Star ariseth subtract the semidurnall arch found in the precedent Table from its southing, as $4^{\text{h}} 34' 52''$ subtracted from $7^{\text{h}} 46' 13''$ leaves 3 of the clock $11^{\text{h}} 21''$ after noon. For the time of setting add 4 hours $34' 52''$ to $7^{\text{h}} 46' 13''$ and it is, $12^{\text{h}} 21' 5''$ that is upon the 18 day $38^{\circ} 55'$ before 1 of the clock in the morning, the true time of setting. It follows then that the southing of the fixed Stars requires a new calculation every year.

Another Example.

To find the exact time of the Moons culmination or southing.

I must confess Mr. Wing hath given good directions in his former annuall writings and since both he and Mr. Leybourn in their *Urania practica*, yet notwithstanding I desire to shew my way, as

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I have formerly practised and taught both without latitude and with latitude, and how to prove the same. The direction is in a manner with the former. An example shall make all plaine. If you will not consider her latitude but only her longitude, then thus. The 16 day of March next when south in our meridian.

The Moon at noon in II

day	{	16 in II 6 ^{id} . 40'	}	Right Ascen.	{	4 ^h . 19'. 15"
		17 in II 16. 6				5 12 9

Difference 0 52 54

The Sun at noon.

day	{	16 in V 5. 51.	}	Right Ascen.	{	0 21 28
		17 in V 6. 50.				0 25 9

Then from the right Ascen. of the Moon I subtract the right Ascen. of the Sun, as from

I subtract 4^h. 19'. 15". R. A.

Remaines 0 21 28. R. A.

the time of her Southing with some.

Then I seek the Sun and Moons right Ascen. at that time: The difference of the Moons right Ascen. in 24 houres is 0^h 52' 54" therefore her hourly motion is 7935''' thirds of an houre. If then I houre give 7935'''. what 3^h 57' 47"? multiply and divide, and you have 8 min. 44 sec. to be added to 4^h 19' 15" and it makes 4^h 27' 59" Next the difference of the Suns right Ascension in 24 houres is 0^h 3 41" therefore his hourly motion 9'' 12''' or 552'''. Then say. If I houre give 552''', what 3^h 57' 47"? multiplied and divided, and you find 36" to be added to 0^h 21' 28" and they make 0^h 22' 4". Then from the Moons right Ascen. at that time 4^h 27' 59" I subtract the Suns right Ascen. 0. 22 4

remaines — 4. 5. 55 which

4 houres. 5'. 55" in the afternoon is the exact time of

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of the Moons Culmination without latitude.
March 16.

For the Proof of this is easie. The \odot at that time is in $\vee 6^d.2'$ whose Ascen. is 22 min. 4 sec. added to the houre $4^h.5'.55''$ make $4^h.27'.59''$. the right Ascension of the arch ecliptick culminating. To which answers $\Pi 8^d.46'$ the place of the Moon at that time: and this appears thus. The diurnall motion of the Moon is $12^d.20'$ therefore her horary motion is $30'.50''$ or $1850''$. Then if one houre give $1850''$ what $4^h.5'.55''$ multiply and diuide, and you find $2^d.6'$. which added to the Moons place at noon $\Pi 6^d.40'$. makes $\Pi 8^d.46'$. agreeing with the former; and this proves this way to be true without respect to her latitude: But if you would have her coming to the South with latitude, you must find her Right Ascen. with latitude both dayes at noon according to the rules given in the third Proposition in this Introduction, then work in all respects as immediately before.

5 Proposition.

Of the Cosmicall and Achyon call rising and setting of any fixed Star; and how to find their true time of rising and setting for any latitude.

1. Cosmicall rising, called *Ortus matutinus*; $\rho\alpha\tau\omicron\lambda\epsilon\ \iota\acute{\alpha}\nu$, is when a Star riseth in the morning at the instant when the Sun riseth.

2. Cosmicall setting, called *Occasus matutinus*, is when a Star sets in the West when the Sun riseth East or Eastward.

3. Achronicall rising, called $\delta\upsilon\omicron\varsigma\ \epsilon\pi\epsilon\epsilon\lambda\epsilon\gamma\epsilon$, is when a Star riseth above the Horizon at Sun setting in the evening, *Ortus vespertinus*.

4. Achronicall setting, called $\delta\upsilon\omicron\varsigma\ \epsilon\pi\epsilon\epsilon\lambda\epsilon\gamma\epsilon$, is when a Star sets in the evening when the Sun sets. *Occasus vespertinus*.

How to find the Cosmicall and Achronicall rising and setting of the fixed Stars for any latitude.

I Rule.

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I Rule.

If the Star hath North declination. Subtract the difference of Ascension of the Star from the right Ascension, the remainder is the oblique Ascension of this *Ortus matutinus*, or Cosmically rising with the Sun. Then to the right Ascension add the difference of Ascension, to that sum add $180^{\circ} 0'$ the totall is the oblique Descension of the *Occasus matutinus*, or Cosmically setting of the Star. But note: if after the last addition the sum be above $360^{\circ} 0'$. that Star hath South Longitude, then cast away $360^{\circ} 0'$. If it be under $360^{\circ} 0'$ it hath North Longitude. Then is the opposite signe to *Ortus matutinus* is the *Ortus vespertinus*, or Achronically rising of that Star; and the opposite signe to the Cosmically setting, is the Achronically setting.

The second Rule

If the Star hath South declination add the difference of Ascension to the right Ascension, the sum is the Oblique Ascension of the Cosmically rising; whose opposite signe is the Achronically rising. Then from the right Ascension take the difference of Ascension to the remainder add $180^{\circ} 0'$ the totall is the oblique descension of the Cosmically setting of the Star, and the opposite signe is the Achronically setting.

Example.

For *Canis Major*, or the greater dog, declination, $16^{\circ} 13'$ South, the Right Ascension is, $97^{\circ} 30'$. the difference of Ascension, $21^{\circ} 17'$ in the latitude of $51^{\circ} 18'$. Then by the second rule to $97^{\circ} 30'$ add $21^{\circ} 17'$. the sum is $118^{\circ} 47'$. to which answers the oblique Ascension for lat. $51^{\circ} 18'$. $\Omega 16^{\circ} 57'$. and with that signe and degree the Star ariseth Cosmically with the Sun. Then it ariseth Achronically with ω , $12^{\circ} 57'$. Next take $21^{\circ} 17'$ from $97^{\circ} 30'$. remaines $76^{\circ} 13'$. to which add $180^{\circ} 0'$ the total is $256^{\circ} 13'$. (because it is under $360^{\circ} 0'$. conclude it in a North signe) to which, in the same latitude answers $\Omega 23^{\circ} 35'$. and with that it doth Cosmically set; and with the opposite signe γ . $23^{\circ} 35'$. it sets Achronically y.

Note.

That if a Star be in a North signe, it cannot have South declination and North latitude, and if in a South signe it cannot have North declination and South latitude.

More I might have written in this kind, but this at this time may be sufficient. and if my labours now may have acceptance, it shall encourage me to go forward in my studies and present better things the next year,

Farewell.

Your Countryman to do you any good
HENRY HARFLETE.

The Table of the Moons latitude.

South North	Sig. 3. Sig. 9.	Sig. 4. Sig. 10.	Sig. 5. Sig. 11.	Ascen Ascen
Deg.	lat. of ☾ Deg. 1. 11.	Lat. ☾ D. 1. 11.	Lat. ☾ D. 1. 11.	Deg.
0	0 0 0	2 29 54	4 19 43	30
1	0 5 14	2 34 22	4 22 18	29
2	0 10 27	2 38 50	4 24 49	28
3	0 15 41	2 43 15	4 27 14	27
4	0 20 54	2 47 37	4 29 34	26
5	0 26 7	2 51 56	4 31 50	25
6	0 31 19	2 56 11	4 34 0	24
7	0 36 31	3 0 24	4 36 6	23
8	0 41 42	3 4 33	4 38 6	22
9	0 46 52	3 8 39	4 40 2	21
10	0 52 2	3 12 42	4 41 52	20
11	0 57 10	3 16 41	4 43 37	19
12	1 2 18	3 20 36	4 45 17	18
13	1 7 24	3 24 28	4 46 52	17
14	1 12 29	3 28 16	4 48 21	16
15	1 17 33	3 32 0	4 49 45	15
16	1 22 36	3 35 40	4 51 4	14
17	1 27 37	3 39 17	4 52 17	13
18	1 32 36	3 42 49	4 53 26	12
19	1 37 34	3 46 17	4 54 29	11
20	1 42 30	3 49 42	4 55 26	10
21	1 47 24	3 53 2	4 56 18	9
22	1 52 16	3 56 17	4 57 4	8
23	1 57 6	3 59 29	4 57 45	7
24	2 1 54	4 2 36	4 58 21	6
25	2 6 39	4 5 38	4 58 51	5
26	2 11 23	4 8 37	4 59 16	4
27	2 16 4	4 11 30	4 59 35	3
28	2 20 42	4 14 19	4 59 49	2
29	2 25 15	4 17 4	4 59 57	1
30	2 29 52	4 19 43	5 0 0	0
Deg.	Deg. 1. 11	D. 1. 11	D. 1. 11	Deg.
South	Sig. 8	Sig. 7.	Sig. 6.	Desc.
North	Sig. 2.	Sig. 1.	Sig. 0.	Desc.

The use of this Table is shewed in the beginning of the Introduction.

The Canon of the hourly motion of the Planets.

The use of this Canon.

IT is divided into 4 Columes. In the first & third is the diurnal motion of the Sun or any other Planet. In the second and fourth is their hourly motion; and this serves to finde place or longitude of any Planet any hour or minute of the day.

Example 1.

I desire to know the true place of the Moon the 29 June, 1651. at 39th. 17th past 5 of the clock in the afternoon. I look into the Ephemeris for her place the 29 day at noon, and find it in γ 14d. 0th and the 30 day in γ 27d. 24th. subtracting one from the other I find her diurnall motion to be 13d. 24th. I look for 13d. under title mot. Diur. and over against it toward the right hand I find 32th. 50th likewise I look for 24th. and I find against it 1st. 01st. 01st added to 32th. 30th makes 33th. 30th her hourly motion. Then if 33th. 30th give 1. houre, what sh 39th. 17th give? multiply and divide, and you shall find 3d. 9th. 25th which added to γ 14d. 0th make γ 17d. 9th. 25th the true place of the Moon at that time.

Example 2.

I would know the place of the Sun at that time. I find his Diurnall motion 57th and therefore his hourly motion 2th. 22th. 01st. then if 2th. 22th. 30th give 1. houre what sh 39th. 17th multiply and divide and you find 13th. 25th to be added to the place of the Sun the 29 day at noon, viz. \odot 16d. 56th and they make \odot 17d. 9th. 25th whereby I see that the Moon is but 3 signes distant from the Sun at that time, wherefore it is the very time of the last quarter of the Moon in our meridian: and so of any other.

Mot diu	Hor. I	Mo diu	Hor. I
G.	G: M: 0	G.	G: M: 8
M.	M: 8: 111	M.	M: 8: 111
S.	S: 111: 1111	S.	S: 111: 1111
1	0:2:30	32	1:20:0
2	0:5:0	33	1:22:20
3	0:7:30	34	1:25:0
4	0:10:0	35	1:27:30
5	0:12:30	36	1:30:0
6	0:15:0	37	1:32:30
7	0:17:30	38	1:35:0
8	0:20:0	39	1:37:30
9	0:22:30	40	1:40:0
10	0:25:0	41	1:42:30
11	0:27:30	42	1:45:0
12	0:30:0	43	1:47:30
13	0:32:30	44	1:50:0
14	0:35:0	45	1:52:30
15	0:37:30	46	1:55:0
16	0:40:0	47	1:57:30
17	0:42:30	48	2:0:0
18	0:45:0	49	2:2:30
19	0:47:30	50	2:5:0
20	0:50:0	51	2:7:30
21	0:52:30	52	2:10:0
22	0:55:0	53	2:12:20
23	0:57:30	54	2:15:0
24	1:0:0	55	2:17:30
25	1:2:30	56	2:20:0
26	1:5:0	57	2:22:30
27	1:7:30	58	2:25:0
28	1:10:0	59	2:27:30
29	1:12:30	60	2:30:0
30	1:15:0	61	2:32:30
31	1:17:30	62	2:35:0

A Table of Right Ascensions.

	V	U	m	II	7	5	W	Q	W	X
G.	H.M.S	H.M.S	H.M.S	H.M.S	H.M.S	H.M.S	H.M.S	H.M.S	H.M.S	H.M.S
1	0. 3. 40	1. 55. 25	3. 55. 25	6. 4. 22	8. 12. 54	10. 12. 12				
2	0. 7. 20	59. 17	59. 36	8. 43	17. 3	16. 0				
3	0. 11. 1	2. 2. 8	4. 2. 48	12. 5	21. 11	19. 4				
4	0. 1. 41	0. 59	0. 0	17. 20	25. 19	23. 35				
5	0. 18. 11	10. 51	12. 13	21. 48	29. 25	27. 23				
6	0. 22. 2	14. 44	16. 26	26. 9	33. 31	31. 8				
7	0. 25. 42	18. 37	20. 40	30. 30	37. 36	34. 54				
8	0. 29. 23	22. 31	24. 53	34. 51	41. 41	38. 40				
9	0. 33. 4	26. 25	29. 10	39. 11	45. 45	42. 24				
10	0. 36. 45	30. 20	33. 26	43. 31	49. 48	46. 9				
11	0. 40. 26	34. 16	37. 42	47. 51	53. 51	49. 53				
12	0. 44. 8	38. 13	41. 59	52. 11	57. 52	53. 37				
13	0. 47. 24	42. 10	46. 16	56. 30	9. 1. 53	57. 20				
14	0. 51. 32	46. 8	50. 24	7. 0. 49	5. 53	11. 1. 3				
15	0. 55. 14	50. 7	54. 52	5. 8	9. 53	4. 46				
16	0. 59. 57	54. 7	59. 11	9. 26	13. 52	8. 28				
17	1. 2. 40	58. 7	5. 3. 30	13. 44	17. 50	12. 10				
18	1. 6. 23	2. 2. 8	7. 49	18. 1	21. 47	15. 51				
19	1. 10. 7	6. 9	12. 9	22. 18	25. 44	19. 34				
20	1. 13. 51	10. 12	16. 29	26. 34	26. 40	23. 15				
21	1. 17. 36	14. 15	20. 49	30. 50	33. 35	26. 56				
22	1. 21. 20	18. 19	25. 9	35. 5	37. 29	30. 37				
23	1. 25. 6	22. 23	29. 30	39. 20	41. 23	34. 18				
24	1. 18. 52	26. 29	33. 51	43. 34	45. 16	37. 58				
25	1. 32. 38	30. 35	38. 14	47. 47	49. 9	41. 39				
26	1. 36. 25	34. 41	42. 34	52. 0	9. 53. 1	45. 19				
27	1. 40. 2	38. 49	46. 55	56. 12	56. 52	48. 59				
28	1. 44. 0	42. 57	51. 17	8. 0. 24	10. 0. 43	51. 40				
29	1. 47. 38	47. 6	55. 38	4. 35	4. 33	56. 10				
30	1. 51. 46	51. 15	6. 0. 0	8. 45	8. 24	12. 0. 0				

If you would know the right Ascension for ♈, ♉, ♊, ♋, ♌, ♍, ♎, ♏, ♐, ♑, ♒, ♓, take the hours, minutes and seconds as they are set down here; but for ♈, ♉, ♊, ♋, ♌, ♍, ♎, ♏, add 12 houres.